

**069039-9**

## <120> VIRAL AMPLIFICATION OF RECOMBINANT MESSENGER RNA IN TRANSGENIC PLANTS

<140> To Be Assigned  
<141> 2001-08-14

<150> 08/336,724  
<151> 1994-11-09

<170> FastSEO for Windows Version 4.0

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<220>
<221> CDS
<222> (70)...(873)
<223> (episomal) peptide encodes for TMV 30kDa movement
        protein (268 residues) and CAT (204 residues).
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<400> 1
guauuuuuuac aacaauuacc aacaacaaca aacaacaaac aacauuacaa uuacuauuuu      60
caauuacau aug gcu cua guu guu aaa gga aaa gug aaU auc aaU gag uuu      111
      Met Ala Leu Val Val Lys Gly Lys Val Asn Ile Asn Glu Phe
            1             5             10

```

gua aag agu guu aug ugu ucc aaa guu gau aaa aua aug guu cau gag 207  
Val Lys Ser Val Met Cys Ser Lys Val Asp Lys Ile Met Val His Glu  
35 40 45

1 / 5

50										55										60										
gau	agu	gga	uac	guc	ugu	uua	gcc	ggg	uug	guc	guc	acg	ggc	gag	ugg		303													
Asp	Ser	Gly	Tyr	Val	Cys	Leu	Ala	Gly	Leu	Val	Val	Thr	Gly	Glu	Trp															
65						70						75																		
aac	uug	ccu	gac	aaU	ugc	aga	gga	ggg	gug	agc	gug	ugu	cug	gug	gac		351													
Asn	Leu	Pro	Asp	Asn	Cys	Arg	Gly	Gly	Val	Ser	Val	Cys	Leu	Val	Asp															
80						85						90																		
aaa	agg	aug	gaa	aga	gcc	gac	gag	gcc	acu	cuc	gga	ucu	uac	uac	aca		399													
Lys	Arg	Met	Glu	Arg	Ala	Asp	Glu	Ala	Thr	Leu	Gly	Ser	Tyr	Tyr	Thr															
95						100						105						110												
gca	gcu	gca	aag	aaa	aga	uuu	cag	uuc	aag	guc	guu	ccc	aaU	uau	gcu		447													
Ala	Ala	Ala	Lys	Lys	Arg	Phe	Gln	Phe	Lys	Val	Val	Pro	Asn	Tyr	Ala															
115						120						125																		
aua	acc	acc	cag	gac	gcg	aug	aaa	aac	guc	ugg	caa	guu	uua	guu	aaU		495													
Ile	Thr	Thr	Gln	Asp	Ala	Met	Lys	Asn	Val	Trp	Gln	Val	Leu	Val	Asn															
130						135						140																		
auu	aga	aaU	gug	aag	aug	uca	gcg	ggg	uuc	ugu	ccg	cuu	ucu	cug	gag		543													
Ile	Arg	Asn	Val	Lys	Met	Ser	Ala	Gly	Phe	Cys	Pro	Leu	Ser	Leu	Glu															
145						150						155																		
uuu	gug	ucg	gug	ugu	auu	guu	uau	aga	aaU	aaU	aua	aaa	uua	ggg	uug		591													
Phe	Val	Ser	Val	Cys	Ile	Val	Tyr	Arg	Asn	Asn	Ile	Lys	Leu	Gly	Leu															
160						165						170																		
aga	gag	aag	auu	aca	aac	gug	aga	gac	gga	ggg	ccc	aug	gaa	cuu	aca		639													
Arg	Glu	Lys	Ile	Thr	Asn	Val	Arg	Asp	Gly	Gly	Pro	Met	Glu	Leu	Thr															
175						180						185						190												
gaa	gaa	guc	guu	gau	gag	uuc	aug	gaa	gau	guc	ccu	aug	ucg	auc	agg		687													
Glu	Glu	Val	Val	Asp	Glu	Phe	Met	Glu	Asp	Val	Pro	Met	Ser	Ile	Arg															
195						200						205																		
cuu	gca	aag	uuu	cga	ucu	cga	acc	gga	aaa	aag	agu	gau	guc	cgc	aaa		735													
Leu	Ala	Lys	Phe	Arg	Ser	Arg	Thr	Gly	Lys	Lys	Ser	Asp	Val	Arg	Lys															
210						215						220																		
ggg	aaa	aaU	agu	agu	aaU	gau	cgg	uca	gug	ccg	aac	aag	aac	uau	aga		783													
Gly	Lys	Asn	Ser	Ser	Asn	Asp	Arg	Ser	Val	Pro	Asn	Lys	Asn	Tyr	Arg															
225						230						235																		
aaU	guu	aag	gau	uuu	gga	gga	aug	agu	uuu	aaa	aag	aaU	aaU	uua	auc		831													
Asn	Val	Lys	Asp	Phe	Gly	Gly	Met	Ser	Phe	Lys	Lys	Asn	Asn	Leu	Ile															
240						245						250																		
gau	gau	gau	ucg	gag	gcu	acu	guc	gcc	gaa	ucg	gau	ucg	uuu				873													
Asp	Asp	Asp	Ser	Glu	Ala	Thr	Val	Ala	Glu	Ser	Asp	Ser	Phe																	
255						260						265																		

uaauacgcu cgacgagauu uucaggagcu aaggaagcua aa aug gag aaa aaa	927
Met Glu Lys Lys	
270	
auc acu gga uau acc acc guu gau aua ucc caa ucg cau cgu aaa gaa	975
Ile Thr Gly Tyr Thr Thr Val Asp Ile Ser Gln Ser His Arg Lys Glu	
275 280 285	
cau uuu gag gca uuu cag uca guu gcu caa ugu acc uau aac cag acc	1023
His Phe Glu Ala Phe Gln Ser Val Ala Gln Cys Thr Tyr Asn Gln Thr	
290 295 300	
guu cag cug gau auu acg gcc uuu uua aag acc gua aag aaa aa uag	1071
Val Gln Leu Asp Ile Thr Ala Phe Leu Lys Thr Val Lys Lys Asn Lys	
305 310 315 320	
cac aag uuu uau ccg gcc uuu auu cac auu cuu gcc cgc cug aug aa u	1119
His Lys Phe Tyr Pro Ala Phe Ile His Ile Leu Ala Arg Leu Met Asn	
325 330 335	
gcu cau ccg gaa uuc cgu aug gca aug aaa guu uuc cau gag caa acu	1167
Ala His Pro Glu Phe Arg Met Ala Met Lys Val Phe His Glu Gln Thr	
340 345 350	
gaa acg uuu uca ucg cuc ugg agu gaa uac cac gac gau uuc cgg cag	1215
Glu Thr Phe Ser Ser Leu Trp Ser Glu Tyr His Asp Asp Phe Arg Gln	
355 360 365	
uuu cua cac aua uau ucg caa gau gug gcg ugu uac ggu gaa aac cug	1263
Phe Leu His Ile Tyr Ser Gln Asp Val Ala Cys Tyr Gly Glu Asn Leu	
370 375 380	
gcc uau uua ccu aaa ggg uuu auu gag aa u aug uuu uuc guc uca gcc	1311
Ala Tyr Leu Pro Lys Gly Phe Ile Glu Asn Met Phe Phe Val Ser Ala	
385 390 395 400	
aa u ccc ugg gug agu uuc acc agu uuu gau uua aac gug gcc aa u aug	1359
Asn Pro Trp Val Ser Phe Thr Ser Phe Asp Leu Asn Val Ala Asn Met	
405 410 415	
gac aac uuc uuc gcc ccc guu uuc acc aug ggc aaa uau uau acg caa	1407
Asp Asn Phe Phe Ala Pro Val Phe Thr Met Gly Lys Tyr Tyr Thr Gln	
420 425 430	
ggc gac aag gug cug aug ccg cug gcg auu cag guu cau cau gcc guc	1455
Gly Asp Lys Val Leu Met Pro Leu Ala Ile Gln Val His His Ala Val	
435 440 445	
ugu gau ggc uuc cau guc ggc aga aug cuu aa u gaa uua caa cag uac	1503
Cys Asp Gly Phe His Val Gly Arg Met Leu Asn Glu Leu Gln Gln Tyr	
450 455 460	
ugc gau gag ugg cag ggc ggg gcg uaa uuuuuuuuag gcaguauug	1550
Cys Asp Glu Trp Gln Gly Gly Ala *	

465

470

gugccuuaaa cgccuggugc uacgccugaa uaagugauaa uaagcggaua aauggcagaa 1610  
 auucgucgag gguagucaag augcauaaa aauaacggau uguguccgua aucacacgug 1670  
 gugcguacga uaacgcgauag uguuuuuuccc uccacuuaaa ucgaagggguu gugucuugga 1730  
 ucgcgcgggu caaanguaau ugguucauau acauccgcag gcacguaaau aagcgagggg 1790  
 uucgaauccc cccguuaccc ccgguagggg ccca 1824

&lt;210&gt; 2

&lt;211&gt; 268

&lt;212&gt; PRT

&lt;213&gt; Tobacco Mosaic Virus

&lt;400&gt; 2

Met Ala Leu Val Val Lys Gly Lys Val Asn Ile Asn Glu Phe Ile Asp  
 1 5 10 15  
 Leu Thr Lys Met Glu Lys Ile Leu Pro Ser Met Phe Thr Pro Val Lys  
 20 25 30  
 Ser Val Met Cys Ser Lys Val Asp Lys Ile Met Val His Glu Asn Glu  
 35 40 45  
 Ser Leu Ser Glu Val Asn Leu Phe Lys Gly Val Lys Leu Ile Asp Ser  
 50 55 60  
 Gly Tyr Val Cys Leu Ala Gly Leu Val Val Thr Gly Glu Trp Asn Leu  
 65 70 75 80  
 Pro Asp Asn Cys Arg Gly Gly Val Ser Val Cys Leu Val Asp Lys Arg  
 85 90 95  
 Met Glu Arg Ala Asp Glu Ala Thr Leu Gly Ser Tyr Tyr Thr Ala Ala  
 100 105 110  
 Ala Lys Lys Arg Phe Gln Phe Lys Val Val Pro Asn Tyr Ala Ile Thr  
 115 120 125  
 Thr Gln Asp Ala Met Lys Asn Val Trp Gln Val Leu Val Asn Ile Arg  
 130 135 140  
 Asn Val Lys Met Ser Ala Gly Phe Cys Pro Leu Ser Leu Glu Phe Val  
 145 150 155 160  
 Ser Val Cys Ile Val Tyr Arg Asn Asn Ile Lys Leu Gly Leu Arg Glu  
 165 170 175  
 Lys Ile Thr Asn Val Arg Asp Gly Gly Pro Met Glu Leu Thr Glu Glu  
 180 185 190  
 Val Val Asp Glu Phe Met Glu Asp Val Pro Met Ser Ile Arg Leu Ala  
 195 200 205  
 Lys Phe Arg Ser Arg Thr Gly Lys Lys Ser Asp Val Arg Lys Gly Lys  
 210 215 220  
 Asn Ser Ser Asn Asp Arg Ser Val Pro Asn Lys Asn Tyr Arg Asn Val  
 225 230 235 240  
 Lys Asp Phe Gly Gly Met Ser Phe Lys Lys Asn Asn Leu Ile Asp Asp  
 245 250 255  
 Asp Ser Glu Ala Thr Val Ala Glu Ser Asp Ser Phe  
 260 265

&lt;210&gt; 3

&lt;211&gt; 204

&lt;212&gt; PRT

&lt;213&gt; Tobacco Mosaic Virus

09930220-031401

<400> 3

Met	Glu	Lys	Lys	Ile	Thr	Gly	Tyr	Thr	Thr	Val	Asp	Ile	Ser	Gln	Ser
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His	Arg	Lys	Glu	His	Phe	Glu	Ala	Phe	Gln	Ser	Val	Ala	Gln	Cys	Thr
			20					25					30		
Tyr	Asn	Gln	Thr	Val	Gln	Leu	Asp	Ile	Thr	Ala	Phe	Leu	Lys	Thr	Val
		35					40					45			
Lys	Lys	Asn	Lys	His	Lys	Phe	Tyr	Pro	Ala	Phe	Ile	His	Ile	Leu	Ala
	50					55					60				
Arg	Leu	Met	Asn	Ala	His	Pro	Glu	Phe	Arg	Met	Ala	Met	Lys	Val	Phe
65					70				75						80
His	Glu	Gln	Thr	Glu	Thr	Phe	Ser	Ser	Leu	Trp	Ser	Glu	Tyr	His	Asp
				85					90					95	
Asp	Phe	Arg	Gln	Phe	Leu	His	Ile	Tyr	Ser	Gln	Asp	Val	Ala	Cys	Tyr
			100					105					110		
Gly	Glu	Asn	Leu	Ala	Tyr	Leu	Pro	Lys	Gly	Phe	Ile	Glu	Asn	Met	Phe
		115					120					125			
Phe	Val	Ser	Ala	Asn	Pro	Trp	Val	Ser	Phe	Thr	Ser	Phe	Asp	Leu	Asn
	130					135					140				
Val	Ala	Asn	Met	Asp	Asn	Phe	Phe	Ala	Pro	Val	Phe	Thr	Met	Gly	Lys
145					150					155					160
Tyr	Tyr	Thr	Gln	Gly	Asp	Lys	Val	Leu	Met	Pro	Leu	Ala	Ile	Gln	Val
			165					170					175		
His	His	Ala	Val	Cys	Asp	Gly	Phe	His	Val	Gly	Arg	Met	Leu	Asn	Glu
			180					185					190		
Leu	Gln	Gln	Tyr	Cys	Asp	Glu	Trp	Gln	Gly	Gly	Ala				
		195					200								

09930329-081401